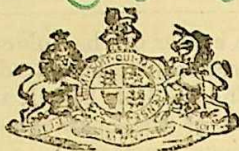


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Date of Application, 7th May, 1895—Accepted, 17th Aug., 1895

COMPLETE SPECIFICATION.

Improvements in or relating to Opera Glasses, and Holders therefor.

We, JEREMIAH MURPHY, of 98 Franklin Street, Merchant, OSCAR FREDERICK ENGWALL, of 936 Walnut Street, Mechanician, and CHARLES ABRAHAM TIDEN, of 6312 Champlain Avenue, Mechanician, all of Chicago, in the County of Cook and State of Illinois, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

The invention relates to opera glasses having holders attached thereto, either adjustably or removably, by means of which the glasses can be held for use, and focussed by the hand grasping the handle of the holder.

- 10 And the object of the invention is to obtain an opera glass of more sightly appearance than has been heretofore made; and of lighter construction.

To obtain an opera glass having a holder of the kind described, the holder whereof can be easily detached from the glass by the person using the same, for placing such glass and holder in the respective cases therefor.

- 15 To obtain an opera glass having a holder of the kind named, the holder whereof, when attached, can be folded and thereby reduced in length, before being placed in the case therefor.

- A further, and comparatively important part of the several objects sought in this invention is, the obtaining of a holder of the kind named which can be attached to
20 opera glasses not originally designed to have a holder attached thereto, in such a manner that the appearance of the glass and holder shall be that of a new article, and not that of an article repaired or added to.

- And it is still further the object of the invention to obtain an opera glass and holder of the kind named wherein the movable parts or gearing shall be inclosed
25 in such manner as to be protected from injury, as well as concealed from observation, leaving only the thumb wheel by which the glass is focussed open to view and touch.

- In the carrying out of our invention we have found it necessary to devise and construct mechanisms which are, by us, substituted for the mechanisms heretofore
30 placed between the barrels of the opera glass for focussing the same; to devise and construct mechanisms for attaching the holder to the opera glass so that such holder can be detached from the glass by the person using the same; to devise folding mechanisms which can be used as substitutes for such detachable mechanisms, when preferred; and at the same time to construct such holder and
35 opera glass so that the gearing contained therein, respectively, shall intermesh or engage, and that without requiring special care or effort on the part of such person; and to devise and construct mechanisms whereby the holder can be shortened, that is, reduced in length.

- By making the holder detachable from the opera glass or arranged to fold
40 against the barrels thereof, and so constructing such holder that it can be shortened, such opera glass and holder can be readily placed in the case provided therefor and such case is not required to be noticeably larger than would be a case adapted to hold the opera glass without such holder.

In the drawings referred to,

- 45 Fig. 1 is a front or end elevation of an opera glass and holder embodying the invention;

[Price 8d.]

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Fig. 2 a section through the center of the holder with such holder removed from the opera glass and folded in readiness to be placed in its case;

Fig. 3 a sectional view on line 3—3 of Fig. 1, viewed in the direction indicated by the arrows, with the barrels of the opera glass, (which barrels are in no way directly affected by the inventions), removed;

Fig. 4 a sectional view on line 4—4 of Fig. 3, viewed in the direction indicated by the arrows;

Fig. 5 a bottom plan view to a smaller scale of the parts illustrated in section in Fig. 3;

Fig. 6 a section on line 6—6 of Fig. 1, viewed in the direction indicated by the arrows;

Fig. 7 a top plan view of the upper end of the holder, showing the part thereof fitting on to the parts illustrated in Fig. 5;

Fig. 8 is a front or end elevation of a modified construction of an opera glass and holder embodying the inventions;

Fig. 9 a sectional view of the holder illustrated in Fig. 8, such holder being removed from the opera glass and folded for packing in the case designed therefor;

Fig. 10 a sectional view on line 10—10 of Fig. 8, viewed in the direction indicated by the arrows;

Fig. 11 a bottom plan view of the central part or portion illustrated in Fig. 10;

Fig. 12 a top plan view of the upper end of the holder, at the point thereof fitting into the parts illustrated in Fig. 11.

Fig. 13 is a vertical sectional view of a detachable thumb wheel which can be substituted for the holder, when desired.

Fig. 14 is a side elevation of one of the barrels of an opera glass, with the bars connecting the barrels shown in cross section, and such opera glass having a three part holder embodying a modification of this invention attached thereto, and in position for use, one of the parts being rigidly secured to the frame of the opera glass and the remaining parts removably attached to the first named part;

Fig. 15 a vertical cross-sectional view on line 2—2 of Fig. 14, viewed in the direction indicated by the arrows.

Figs. 16 and 17, respectively, are perspective views of mechanisms mounted in the middle part of the holder and forming an extensible rotatable spindle.

Fig. 18 is a perspective view of the handle part of the holder illustrated in Figs. 14 and 15.

Fig. 19 a perspective view of a spring contained in the part of this modified constructions which is rigidly secured to the frame of the opera glass;

Fig. 20 a perspective view of that end of the middle part of the holder which abuts against the spring illustrated in Fig. 19, when the holder is in position for use;

Fig. 21 an elevation of such modification of one of the details of the three part construction;

Fig. 22 an elevation of such modification in position to be placed, with the opera glass, in the case thereof;

Fig. 23 a central longitudinal section of an opera glass and a part of the three part holder embodying this invention, with the part of such holder adjacent and rigidly secured to the frame of the opera glass connected to the middle part by different means from which the same are connected in such Fig. 15; and also showing the frame extending between the bars connecting the barrels of the opera glass constructed of a tube, with a tubular bar having a geared rack therein extending into, (and longitudinally movable in), such tubular frame;

Fig. 24 an end view of the construction illustrated in Fig. 23, on line 24—24 of Fig. 23, and

Fig. 25 a horizontal cross-sectional view of the tubular frame illustrated in Fig. 23 and a bottom plan view, (looking up), of the tubular bar and geared rack extending into such tubular frame, as indicated by line 25—25 of Fig. 23 and the arrow crossing such line.

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A reference letter employed to indicate a given part is used to designate such part in all the views thereof wherever the same appears, throughout the several figures of the drawings.

A is an opera glass, a, a , being the respective barrels thereof and a^1, a^1 the bars forming part of the frame-work of the opera glass and connecting such barrels together. A^2 , (Figs. 23, 24, 25), is a tubular frame secured to bars a^1, a^1 , and A^{20} is a tubular bar longitudinally movable in frame A^2 . In the constructions illustrated in Figs. 1 to 13 both inclusive, B is the handle of the holder and D is a yoke connecting handle B with tube E. Yoke D consists of the part d designed to be rigidly attached to handle B; the body parts d^1, d^2 , pivotally attached together at one end thereof and adapted to be opened and closed on the connecting tube E; and catch d^4 . What we deem the preferable construction of catch d^4 is illustrated in Figs. 1 2 and 6. In this construction d^5 is an abutment on part d^1 of yoke D, and d^6 is a groove in abutment d^5 . d^7 is a stop on the side of abutment d^5 . d^8, d^8 , are abutments on part d^2 , between which abutment d^5 extends when the holder is in operative adjustment. d^9 is a thumb wheel rotatably mounted on part d^2 of the yoke, and d^{10} is the circular base of rotatable thumb wheel d^9 . d^{11} is a notch in base d^{10} of thumb wheel d^9 , such notch corresponding with abutment d^5 , so that when the notch is over the opening or space between abutments d^8, d^8 , such abutment can be extended through the notch, with groove d^6 above the part d^2 and in place so that rotation of the thumb wheel will cause flange or base d^{10} to extend into the groove and so hold parts d^1, d^2 firmly together, thereby obtaining yoke D. F is a sleeve rigidly secured to the upper end of tube E. f, f , are beveled flanges on sleeve F, and f^1, f^1 , are notches in such flanges. These flanges f, f , extend further, radially, on one side of notches f^1, f^1 than on the other side thereof. F^1 is a frame secured to bars a^1, a^1 . f^2, f^2 are abutments, having flaring heads, secured to frame F^1 . To attach the holder to the opera glass, in this construction, the notches f^1, f^1 are placed over the abutments f^2, f^2 , and the holder turned so that the flanges f, f , are brought firmly against the flaring heads of such abutments, on the under side thereof.

F^2 is a passage way in frame F^1 . F^3 is a bar secured at one end to bar C and extending into passage way F^2 , in which passage way such bar is longitudinally movable. F^4 is a spring abutting against frame F^1 , and bar F^3 , in passage way F^2 . f^3 is a geared pinion intermeshing with geared teeth f^4, f^4 on bar F^3 , and f^5 is a square hole or recess in such pinion. G, G^1 , are washers secured on bars a^1, a^1 , respectively. H is a rotatable spindle, having squared end h fitting into hole or recess f^5 .

Where the ordinary focussing apparatus is taken out of an opera glass and this construction substituted therefor the space around the frame F^1 in bars a^1, a^1 is covered by the washers G, G, and a slightly appearance secured.

Rotation of spindle H rotates pinion f^3 , thus moving bar F^3 longitudinally and focussing the glass. Spindle H extends through the tube E and has thumb wheel I thereon by which, when the holder is in position for use, such spindle is turned.

In the modified construction illustrated in Figs. 8 to 12, both inclusive, a different form of catch for holding the parts of the yoke D in a closed position; a frame work designed to be attached to the ordinary opera-glass without taking therefrom the adjusting devices forming part of the ordinary focussing apparatus of an opera glass; and a different construction for securing the holder to the frame of an opera glass, are shown. In this construction beveled gears are secured on the sleeve or tube of the ordinary focussing mechanism of an opera glass, with intermeshing beveled gears rotatably mounted in a frame, such last named gears being actuated by the thumb wheel in the handle of the holder or adjacent thereto.

J is the frame work, consisting of parts j, j^1 , secured together by screws or pins j^2, j^2 . Frame work J is thus made adjustable for different sizes of opera glasses. j^3 is a slot in part j of frame J through which screws or pins j^2, j^2 extend.

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In certain cases we have foreseen that it may be advisable to make a holder adapted to be held in the right hand or the left hand, as preferred, and we accomplish this as follows. Parts j, j^1 of frame J have upturned ends. j^1 is a hole in upturned end of part j , such hole fitting over the end of the focussing tube of the glass, and j^5 is a hole in the upturned end of part j^1 with screw j^6 5 extending therethrough. Screw j^6 fits into the end of the focussing tube of the glass.

The catch used in this construction for holding the parts d^1, d^2 , of yoke D, together, consists simply of the spring lever K pivoted in abutment d^5 so as to extend between abutments d^8, d^8 , and engage at the hooked end k thereof with projection k^1 connecting such abutments. K¹ is a spring yieldingly holding spring lever K in engagement with projection k^1 . 10

The construction by which the holder is attached to the opera glass frame in Figs. 8 to 12, both inclusive consists of the rotatable and longitudinally movable sleeve L on tube E, having internal screw threads l , engaging with screw threads l^1 15 on projection L^1 of frame J. l^2 is a flange on tube E preventing sleeve L from being removed or coming off of the tube E. Such sleeve is brought into close contact with the flange by the engagement of screw threads l, l^1 . M is a projection on projection L^1 of frame J, arranged to fit into a corresponding hole m in the end of tube E and prevent rotation of the holder when spindle H thereof is turned to 20 focus the opera glass. More than one hole m may be placed in tube E, or in the ferrule thereon, to enable a quick attachment to be made of the holder to the opera glass.

h^1 is the squared end, (or rectangular), of spindle H, and h^2 is a corresponding hole or recess in hub p of the rotatably mounted beveled gear P. 25

The construction illustrated in Fig. 13 consists of the non-rotatable sleeve or tube N attached to the frame extending between bars a^1, a^1 , of the opera glass, and the rotatable spindle O, having thumb wheel O¹ thereon, at one end thereof, and rectangular end O² at the other end, fitting into rectangular hole f^5 , of rotatable pinion f^3 . 30

The fastening illustrated and hereinbefore described consisting of the beveled flange F, having openings f^1, f^1 and abutments f^2, f^2 , may be substituted for the sleeve N having hole m therein, (shown in Fig. 13), if preferred.

In the construction illustrated in Figs. 14 to 25, both inclusive, there is shown a three part holder; one of such parts rigidly attached to the frame connecting the 35 cross bars a^1, a^1 , between the barrels of the opera glass; one removably or adjustably, (as preferred), secured to the first named part; and one, the handle of the holder, adjustably secured to the second named, and middle part of the holder. The thumb wheel is secured to a spindle rotatably mounted in the handle of the holder. 40

In Figs. 14 to 22, both inclusive, tube N¹ is rigidly secured to frame F¹. N² is a common bent or coiled spring, having one or more turns, in tube N¹. N^{3, N^3} are slots in tube N¹, having peripherally extending portions n, n , and entrances n^1, n^1 . E¹ is a tube forming the middle part of the holder. Tube E¹ fits into tube N¹. e^1, e^2 , are pins or stops on tube E¹, fitting into slots N^{3, N^3}. B¹ is the handle of the 45 holder, and B² is a hinge securing it to tube E¹. b^1 is a catch on tube E¹, engaging with abutment b in handle B¹. B³ is a recess on handle B¹, into which pin or stop e^1 extends when the handle is folded over on tube E¹ for packing. I¹ is the thumb wheel and I² the shaft thereof. g^1, g^1 are grooves across the end of shaft or spindle I². H^{2, H^3} are the parts forming a rotatable shaft in tube E¹. For 50 convenience of reference we shall term parts H^{2, H^3}, shafts. Shaft H² has spindle h^3 forming one end thereof, with hole or recess h^4 and slots h^5, h^5 therein. h^6 is an annular groove at the other end of shaft H², and h^7 is the squared end thereof. H³ preferably consists of a spindle having annular groove h^8 and end h^9 with abutments h^{10}, h^{10} , thereon. h^{11} , is a spring on spindle h^9 , one end of the spring 55 abutting against the shoulder formed by spindle h^9 being of less diameter than the remaining part of the shaft, and the other end of such spring abutting against the

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end of shaft H^2 . Spring h^{11} thus tends to force shafts H^2 , H^3 longitudinally away from each other and to yieldingly hold them in an extended position in tube E^1 . Pins or abutments h^{10} , h^{10} , engage with slot h^5 , h^5 , so that rotation of shaft H^3 , (by thumb wheel I^1), rotates shaft H^2 . H^4 is a pin or stop in tube E^1 , (Fig. 15), extending into groove h^8 , permitting limited longitudinal movement of shaft H^2 in such tube. h^{12} , h^{12} , are grooves across the end of shaft H^3 , intermeshing with the corresponding ribs, (formed by grooves g^1 , g^1), across the end of shaft I^2 when handle B^1 and tube E^1 are in axial line.

In the construction illustrated in Figs. 21, 22, tube E^1 is hinged on the rigidly secured tube N^1 ; stem H^1 and shaft H^2 having corresponding grooves and ribs at h^{13} , which intermesh. And in this construction J^1 is a sleeve on tube E^1 , longitudinally movable so as to be slid when desired, over tube N^1 , forming a lock to the hinge connecting the parts and holding the tube E^1 and tube N^1 in axial line; or to be slid off from over such hinge, permitting such tubes to be folded for

packing.

In Figs. 23, 24 and 25, a construction is shown wherein a tubular frame is secured to bars a^1 , a^1 , by being extended through holes in such bars and having washers over the ends thereof secured to the bars, and an apparatus embodying our invention connected thereto. A^2 is such tubular frame. G^2 , G^3 are the washers; H^4 the geared pinion, and A^4 the geared rack intermeshing therewith. a^4 is a bar extending between and secured to open rings A^6 , A^7 . a^7 is also a bar extending between open rings A^6 , A^7 . Bar a^7 and open rings A^6 , A^7 , have preferably, frictional contact with the inner surface of tube A^2 .

To substitute this construction of the apparatus embodying the invention for the ordinary focussing apparatus of an opera glass it is necessary, first, to remove the tube, thumb wheel and connecting parts, and replace such parts with the tube A^2 , and the contained and connecting parts described, and then secure the washers G^2 , G^3 on bars a^1 , a^1 , over the ends of tube A^2 to hold such tube in place.

To use this construction handle B^1 and tube E^1 are brought into axial line and the catch connecting such handle and tube engaged to maintain them in position, and tube E^1 joined to tube N^1 in like position. The turning of thumb wheel I^1 will then turn pinion H^4 engaging with geared rack A^4 and focus and glass.

(Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed we declare that what we claim is:—

1. In an opera glass holder consisting of a cylindrical body part and a handle, a yoke joining the handle and body part, such yoke consisting of bars connected together at one end by a pivot and at the other end by a catch, whereby the yoke can be separated and the handle and body part folded; a spindle rotatably mounted in the cylindrical body part of the handle, a connection between the spindle and the focussing mechanism of the opera glass, and a thumb wheel on the spindle at the end thereof extending into the yoke; substantially as described.

2. In an opera glass, a bar extending between the bars connecting the barrels of the opera glass, washers fitting over the ends of the bar and fitted to the connecting bars, a passage way in the first named bar, a bar fitting movably in the passage way, a geared rack on the last named bar a rotatably mounted geared pinion mounted in the first named bar engaging with the geared rack, and a holder removably attached to the first named bar, such holder consisting of a body part and a handle joined together by a separable yoke, a rotatable spindle in the body part engaging with the rotatable pinion when the holder and opera glass are joined together, and a thumb wheel on the spindle within the yoke; substantially as described.

3. In an opera glass, a bar extending between the bars connecting the barrels of the opera glass, a passage way in the first named bar, a bar fitting movably in the passage way, a geared rack on the last named bar, a rotatably mounted pinion engaging with the geared rack mounted on the last named bar, a spring in the

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passage way abutting against the bars, a cylindrical sleeve, a spindle rotatably mounted on the sleeve, a thumb wheel on the spindle and an engagement between the spindle and rotatable pinion, and means for removably attaching the sleeve to the first named bar; substantially as described.

4. In an opera glass, a frame extending between the bars connecting the barrels of the opera glass and attachable to such bars, a geared pinion forming a driving gear rotatably mounted on the frame, a connection between such geared pinion and the extensible tubes of the opera glass, and a holder removably attached to such frame, such holder having a rotatable spindle therein engaging with the rotatable pinion when the holder and frame are joined together, a thumb wheel on the spindle and a yoke composed of separable bars extending around the thumb wheel and connecting the handle and the body part of the holder together; substantially as described.

5. In an opera glass holder a handle and a cylindrical body part, a separable yoke connecting such handle and body part together, a rotatable spindle mounted in the holder, a thumb wheel on the spindle and within the yoke, and means for attaching the holder to the frame of an opera glass, with a connection between the ends of such rotatable spindle and the focussing mechanism of the opera glass; substantially as described.

6. In an opera glass holder, a rotatable spindle, a cylindrical body part in which the spindle is mounted, a handle, a yoke between the handle and a body part, a thumb wheel on the spindle within such yoke, a beveled flange on the end of the body part, such flange having portions thereof cut away, and abutments on the bar of an opera glass between the barrels thereof, such abutment extensible through the openings formed therefor by the cutting away of the portions of the beveled flange and fitting against the beveled flange when the body part of the holder is turned into position; substantially as described.

7. In an opera glass holder, a rotatable spindle, a cylindrical body part within which the spindle is mounted, a handle, a yoke between the handle and the body part, such yoke consisting of bars connected together by a pivot at one end thereof and by a catch at the other end, a thumb wheel on the spindle and within such yoke, and means for attaching the holder to the frame extending between the bars connecting the barrels of the opera glass, a squared end on the spindle engaging with the rotatable pinion in the frame, and a connection between the rotatable pinion and the focussing mechanism of the opera glass; substantially as described.

8. In an opera glass, a frame extending between the bars connecting the barrels of the glass, such frame having a passage way therein, a bar connected at one end thereof to the bar connecting the tubes of the opera glass and longitudinally movable in the passage way, a geared rack on such longitudinally movable bar, a geared rotatable pinion mounted in the first named frame to engage with the geared rack, and a holder attachable to such frame, such holder having a rotatable spindle therein engaging with the rotatable pinion when the holder and opera glass are joined together, and a thumb wheel thereon midway of the holder, whereby it can be rotated by the thumb and forefinger of the hand grasping the handle; substantially as described.

9. In an opera glass, a frame extending between the bars connecting the barrels of the glass, such frame having a passage way therein, a bar connected at one end thereof to the bar connecting the tubes of the opera glass and longitudinally movable in the passage way, a geared rack on such longitudinally movable bar, a geared rotatable pinion mounted in the first named frame to engage with the geared rack, a spring abutting against the first named frame and against the bar longitudinally movable therein, a holder and mechanism in the holder for turning the pinion, the driving wheel of such mechanism being midway of the two ends of the holder; substantially as described.

10. The combination of a three part holder, one of such parts rigidly secured to an opera glass frame, one of the parts removably or adjustably secured to the first named part, and the remaining part, forming the handle, adjustably secured

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to the second named part, with mechanism rotatably mounted in the several parts whereby the opera glass can be focussed by the thumb and forefinger of the hand grasping the handle part of the holder substantially as described.

11. The combination of a three part holder, one of such parts rigidly secured to the opera glass, a second part removably or adjustably secured to the first named part, and a third part forming a handle to the holder adjustably secured to the second named part, with a spindle rotatably mounted in the first named part, a pinion on the spindle engaging with a corresponding rack of the focussing mechanism of the opera glass, a spindle rotatably mounted in the second named part, the ends of such spindle being, respectively, yieldingly held in an extended position, and a thumb wheel in the handle part of the holder, the intermediate spindle being arranged to engage with the spindle of the thumb wheel and the spindle of the pinion; substantially as described.

12. The combination with an opera glass of a three part holder, one of such parts secured to the opera glass, the adjacent part adjustably secured to the first named part, and the remaining part adjustably secured to the second named part, with mechanism rotatably mounted in the several parts whereby the opera glass can be focussed by turning a thumb wheel in the last named part and adjacent to the second named part by the thumb and forefinger of the hand grasping the third named part; substantially as described.

13. The combination with an opera glass of a holder consisting of a tube secured to the frame of the opera glass, a spindle rotatably mounted therein, a pinion on the spindle engaging with a rack, a rack secured to the cross bar connecting the draw tubes of the opera glass, a tube connecting with the first named tube, spindles rotatably mounted in the second named tube, such spindles engaging rotatably with each other and being independently longitudinally movable in the tube, means for yieldingly holding the spindles in an extended position relative to the tube, and a handle connecting with the second named tube, with a spindle having a thumb wheel thereon mounted in such handle, all of such spindles being rotatably connected when the several parts of the holder are in an operative position; substantially as described.

14. In a three part opera glass holder, the combination of a thumb wheel rotatably mounted in the handle part of the holder, a spindle rotatably mounted in the part of the holder adjacent to the handle part, such spindle consisting of two shafts connected together so as to rotate in unison and to move longitudinally independently of each other, a spring yieldingly holding both of such shafts in an extended position, and a spindle mounted in the remaining part of the holder, and all of such spindles coming in contact at the ends thereof adjacent to each other when the holder is in position for use and engaging so as to rotate in unison; substantially as described.

Dated this 7th day of May 1895.

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